

94 00977

9494

Noise Element
Book One
Pacifica

INSTITUTE OF GOVERNMENTAL
STUDIES LIBRARY

AUG 11 1993

UNIVERSITY OF CALIFORNIA

PACIFICA NOISE ELEMENT

JAN/9494

**NOISE ELEMENT
for the
GENERAL PLAN
of the
CITY OF PACIFICA**

**BOOK ONE
NOISE ELEMENT**

By Maurice A. Garbell

M.A.G. CONSULTANTS, INC.

San Francisco, California

August 1976

DRAFT NOISE ELEMENT FOR THE GENERAL PLAN OF THE CITY OF PACIFICA

BOOK ONE.

PrefacePreface I-i

Section N: NOISE IN PACIFICA.

Introduction	N-1
Five Avenues of Noise-Impact Mitigation.	N-2
The Principle of Mutuality in Noise-Impact Mitigation	N-2
The Environmental Setting of the City of Pacifica	N-4
Major Sources of Noise	N-4
I. Noise From Sources on the Ground.	N-4
II. Aircraft Noise	N-7
Methodology Employed for Noise Measurement and Noise Calculation	N-8
1975 Noise Contours.	N-9
Future Noise Contours	N-10
Noise-Level Compatibility Criteria for Land-Use Planning.	N-11
Practicable Structural Improvements for Noise Reduction From the Exterior to the Interior in New Structures	N-13
Section I: Goals, Policies, Programs, and Official Positions and Recommendations	I-1
Goal I. Abatement of Unnecessary Noise from Automotive Vehicles	I-2
Goal II. Abatement of Unnecessary Noise from Future Rail Lines	I-4
Goal III. Abatement of Unnecessary Noise from Industrial Plants.	I-5
Goal IV. Abatement of Unnecessary Noise from Miscellaneous Sources	I-6
Goal V. Abatement of Unnecessary Noise from Airport and Flight Activities	I-6
Goal VI. Adoption of a City Building Noise-Insulation Ordinance.	I-10
Goal VII. Inclusion of Noise Considerations in All Future Land-Use Decisions	I-11
Goal VIII. Protection of Noise-Abatement Flightpaths by Establishing Height Limitations for Proposed Buildings and Other Structures	I-12
Goal IX. Protection of Noise-Abatement Flightpaths by Controlling Light Sources and Light Reflections Within the City of Pacifica to Avoid Disorientation of Pilots	I-12

Appendices

- Appendix A: Government Code Section 65302(g).
- Appendix B: Administrative Code Section 1092.
- Appendix C: Glossary of Noise Terms and Aviation Terms.
- Appendix D: Traffic Noise Data.
- Appendix E: 1975 CNEL Contours (7 Charts).

*

DRAFT NOISE ELEMENT FOR THE GENERAL PLAN OF THE CITY OF PACIFICA

BOOK ONE

Preface

Preface I-1

Section II: NOISE IN PACIFICA

Introduction

N-1	Five Avenues of Noise-Impact Mitigation
N-2	The Principle of Mutuality in Noise-Impact Mitigation
N-3	The Environmental Setting of the City of Pacifica
N-4	Major Sources of Noise
N-5	1. Noise Sources on the Ground
N-6	2. Aircraft Noise
N-7	Methodology Employed for Noise Measurement and Noise Calculation
N-8	1975 Noise Contours
N-9	Future Noise Contours
N-10	Noise-Level Compatibility Criteria for Land-Use Planning
N-11	Practicable Structural Noise Reductions
N-12	The Interior in New Structures

Digitized by the Internet Archive

in 2025 with funding from

State of California and California State Library

I-1	Section I: Goals, Policies, Programs, and Official Position and Recommendations
I-2	Goal I: Abatement of Unnecessary Noise from Future Rail Lines
I-3	Goal II: Abatement of Unnecessary Noise from Industrial Plants
I-4	Goal III: Abatement of Unnecessary Noise from Miscellaneous Sources
I-5	Goal IV: Abatement of Unnecessary Noise from Airport and Flight Activities
I-6	Goal V: Adoption of a City Building Noise-Insulation Ordinance
I-7	Goal VI: Inclusion of Noise Considerations in All Future Land-Use Decisions
I-8	Goal VII: Protection of Noise-Abatement Rights by Establishing
I-9	Height Limitations for Proposed Buildings and Other Structures
I-10	Goal VIII: Protection of Noise-Abatement Rights by Controlling Light
I-11	Sources and Light Reflections Within the City of Pacifica to Avoid
I-12	Disorientation of Pilots

Appendices

A-1	Appendix A: Government Code Section 65303(g)
A-2	Appendix B: Administrative Code Section 1002
A-3	Appendix C: Glossary of Noise Terms and Aviation Terms
A-4	Appendix D: Traffic Noise Data
A-5	Appendix E: 1975 CNEL Contours (Charts)

M. A. G. CONSULTANTS, INC.

Table of Contents, continued.

BOOK TWO.

Section II. A Plan for the Reduction of Noise-Exposure Levels in the City of Pacifica.

Introduction	II-1
Five Avenues of Noise-Impact Mitigation.	II-1
I. Quieting the Noise at the Source	II-2
II. Removing the Source of the Noise.	II-11
III. Barring the Path of the Noise From Its Source to the Recipient	II-27
IV. Shielding the Recipient of Noise Within His Dwelling or Place of Work	II-30
V. Avoiding the Placement of Potential Recipients of Noise Into the Impact Area of Unavoidable, Unabatable, Irremovable, Noise	II-31
Noise Abatement for Pacifica - Proposed Action	II-37
Section III. Discussion of Fundamentals. Sound and Noise.	III-1
Section IV. Noise Monitoring - A Complex Undertaking.	IV-1
Section V. Summation of Noise Levels.	V-1
Section VI. Computation of State Highway Noise	VI-1
Section VII. Computation of Rail-Vehicle Noise	VII-1
Section VIII. Aviation Noise - 1975	VIII-1
Section IX. The Contribution of Each of the Three Jet Airports in the Central Bay Area to Air Traffic and Airport Noise.	IX-1
Section X. Noise Exposure Levels in Pacifica - 1975	X-1
Section XI. Adjustment of CNEL Contours for the Existence of Shielding Structures or Vegetation.	XI-1
Section XII. The Summation of Community Noise Levels Derived From Noise Sources on the Ground and From Aircraft Flight Activities	XII-1
Section XIII. Future Noise Levels	XIII-1
Section XIV. Foreseeable Future Noise Exposure Attributable to Aviation Sources.	XIV-1
Section XV. Practicable Structural Improvements for Noise Reduction From the Exterior to the Interior in New Structures	XV-1

BOOK THREE: Environmental Impact Report.

PREFACE

Authorization. Pursuant to California Government Code Section 65302(g), each local jurisdiction must include in its adopted General Plan a Noise Element (See Appendix A). The present Noise Element, prepared by M.A.G. Consultants, Inc., under contract with the City of Pacifica, complies with the specifications of Government Code Section 65302(g). In order to afford foreseeable practical benefits, this Noise Element also includes recommendations and policy guidelines applicable to noise mitigation both for exterior noise and for necessary outdoor-to-indoor noise reduction as set forth in Title 25, Section 1092(e) of the California Administrative Code in which Noise-Insulation Standards are established (See Appendix B).

Purpose and Scope. The Community Noise Element describes present noise levels in the community and sets forth a program for reducing noise in the future to levels that will not cause hearing loss or be otherwise generally objectionable. Information included in the Element should be used to help determine proper land use and construction of buildings relative to noise in the community, as well as establishing the steps which should be taken to reduce noise impacts that originate from outside the community.

Contents. The Noise Element is comprised of three separate BOOKS and a set of accompanying large-scale noise-contour charts.

BOOK ONE, which is to be referred to commonly as The Noise Element for the City of Pacifica, contains two sections, namely:

Section N. "Noise in Pacifica."

Section I. Goals, Policies, Programs and Official Positions and Recommendations.

The contents of BOOK ONE constitute a brief summary statement of, and incorporate by reference, an exhaustive presentation of a plan of noise reduction for the City of Pacifica, together with scientific and technical background material, all of which is contained in BOOK TWO, copies of which may be found in the files of the City Offices for the perusal of interested citizens. Also available for perusal at the City Offices are large mylar reproductions of contours of equal decibel (dB) values of the 1975 Community Noise Equivalent Level (CNEL) attributable to noise sources on the ground, drawn at the same scale as the existing aerial photographs, terrain contour maps, and street maps published by the Engineering Department of the County of San Mateo, namely, at 400 feet per inch. The mylars bearing the large-scale CNEL contours have been prepared to serve conveniently as overlays over any of the three sets of County charts. The City of Pacifica holds file copies, also, of the aircraft CNEL Charts drawn to the same scale of 400 feet per inch and published by the San Mateo County Airport Land Use Commission.

BOOK TWO is a comprehensive technical report which describes the details of the recommended plan for noise reduction in the City of Pacifica and sets forth the scientific background and the technical methodology employed in the preparation of the Noise Element.

BOOK THREE is a formal Draft Environmental Impact Report for the Noise Element.

Section N "Noise In Pacifica"

Section N: NOISE IN PACIFICA.

INTRODUCTION

It is characteristic of man to seek to abate noise that is in excess of the "natural" noise level of an open rural countryside and to take measures to suppress any noise that intrudes upon him at a level that exceeds the noise level created by him within his own homelife or activities and in his verbal communication with others.

The acoustical profession, the State of California, and the United States Environmental Protection Agency (EPA) have found that man, in his total daily noise exposure to all kinds of outdoor and indoor noises, is fully comfortable generally with a community noise equivalent level (CNEL)* of up to 55 decibels (dB). In fact, man's own self-generated "home-life noise levels" in residential quarters can approach or even exceed 55 dB.

In an exterior ambient pervaded by aircraft noise, with its particularly disturbing or irritating character, man is amenable in general to a CNEL or an L_{dn} ** attributable to aircraft noise of 65 dB as a CNEL/ L_{dn} limit for detached single-family dwellings in an urban area with some seasonal "outdoor living." In his overall activity, in which man has surrounded himself with self-created noisy machines for transportation, office work, industrial production, and recreation, man has conditioned himself to tolerate a total annual CNEL or L_{dn} of up to 70 dB or more outside of his own dwelling.

In the City of Pacifica the total annual exterior CNEL, on the whole, exceeds 55 dB. The few exceptions are sheltered areas in the valleys rising to Sweeney Ridge and elsewhere in gardens, yards, and cul-de-sacs. In some areas of the City of Pacifica, the prevailing total CNEL has been observed to exceed 65 dB. There are some areas in the northerly Edgemar-Fairmont area of the City of Pacifica where the exterior CNEL contributed by aircraft noise or aircraft-engine noise occasionally exceeds 65 dB.

With appropriate measures of noise abatement by which aircraft activities and aircraft-engine operations are controlled properly, no residential area in the City of Pacifica need be exposed, now or ever, to aircraft noise-exposure levels in excess of an annual CNEL of 65 dB. This objective can be readily achieved without stifling any legitimate activity at any airport in the San Francisco Bay Area or within the airspace of the San Francisco Bay.

It is appropriate that the City of Pacifica take specific steps, such as those suggested hereunder, to attain a reduction of noise-exposure levels for the protection of its citizens and residents. None of the specific steps that are suggested herein, or alternate steps that might be deemed practicable to achieve the same end, will exert a significant adverse impact on people or cities within or without the City of Pacifica.

* CNEL, as defined in Title 4, Subchapter 6, Section 5006(f), of the California Administrative Code.

** L_{dn} , the EPA-adopted day-and-night equivalent noise level, which has a slightly different set of weighting factors than the CNEL, and which differs less than 1 dB from the CNEL.

Five Avenues of Noise-Impact Mitigation.

The City of Pacifica needs to explore and pursue the following five specific means of achieving noise-impact mitigation in the City:

- I. Quieting the noise at the source.
- II. Removing the source of the noise from the recipient of the noise.
- III. Barring the path of the noise from its source to the recipient.
- IV. Shielding the recipient of noise within his dwelling or place of work.
- V. Avoiding the placement of potential recipients of noise into the impact area of unavoidable, unabatable, irremovable noise.

In some instances, noise-abatement activities may pertain to more than one of these categories or avenues of noise-impact mitigation. Each of these avenues is analyzed and discussed at length in BOOK TWO.

The Principle of Mutuality in Noise-Impact Mitigation.

The Fundamental Concept of Control of Noise.

The present Noise Element is based on the concept that the production and spreading of injurious noise is an undesirable intrusion by one man into the life sphere and surroundings of another, and that injurious noise is not to be permitted.

Past and Future Efforts.

The City of Pacifica and many other communities have done much and can do even more to reduce the noise burden on citizens and residents of the City in each of the five afore-listed avenues or categories of amelioration.

Co-operation of Others.

The City of Pacifica and its citizens and residents need to enlist the co-operation of others, outside of the City, to render their own efforts meaningfully effective. In this respect the City of Pacifica enjoys broad support for this endeavor from many of its friends and neighbors of goodwill.

No Shifting of a Significant Noise Burden on Others.

Much of the present noise exposure in the City of Pacifica is attributable to activities that are generated from outside the City. In its endeavor to reduce its own noise burden, the City of Pacifica must at all times be mindful that relief from noise to its citizens and residents should not find remedy by shifting a significant noise burden onto people elsewhere.

(The Principle of Mutuality in Noise-Impact Mitigation, continued)

No Significant Constraint on Legitimate Personal or Commercial Activities.

There are no known noise problems affecting the City of Pacifica that cannot be abated without depriving anyone from the exercise of legitimate activities. There is no known excessively noise-emitting activity that cannot be performed to a like extent, or with equal or greater efficiency, without inflicting excessive noise on Pacifica.

Noise abatement for the City of Pacifica does, however, require that, when an activity can be performed either with excessive noise or without excessive noise, such activity be carried out without excessive noise. This requirement may warrant a need for discipline over the manner in which an activity is performed, but does not exact a constraint over the scope of that activity. To this co-operation by all the City of Pacifica is clearly entitled.

The Environmental Setting of the City of Pacifica.

The City of Pacifica, California, is located almost due west of the San Francisco International Airport. Most of the City lies along the shoreline of the Pacific Ocean, west of the Coastal Mountain Range. The northernmost portion of the City, known as the "Edgemar - Fairmont District," lies in part adjacent to the so-called "skyline" or crest of the Coastal Range. In its southern portions, the City comprises several residentially developed cross valleys that rise gently upward in a west-to-east direction along the Pacific Ocean slope of the Coastal Range.

Maps on Pages N-5 and N-6 depict the general and local topography. The precise street pattern of the City is depicted in detail in the reproduction of the CNEL contours in the foldouts at the end of BOOK ONE, at a scale of 1,000 feet per inch, comprising maps Nos. 3B, 4B, 5A, 5B, 6A, and 6B of the series of orthophoto charts issued by the County of San Mateo.

Major Sources of Noise.

The current noise exposure in the City of Pacifica is attributable to a combination of the following sources:

- I. Noise from sources on the ground;
- II. Aircraft noise.

I. Noise From Sources on the Ground.

The noise exposure in the City of Pacifica from sources on the ground is the sum total of sound generated by at least the following sources, listed in the order of approximate intensity and pervasiveness:

1. State Highway Route 1 (The Cabrillo Freeway and Highway), with a noise peak during the early morning and late afternoon rush hours;
2. State Highway Route 35, the Skyline Boulevard, with a diurnal cycle similar to that of Route 1, but on a smaller scale;
3. Principal local thoroughfares, centering on and branching out from the following central arteries:
 - (a) Manor Drive, Monterey Road, and Hickey Boulevard in Pacific Manor and Edgemar;
 - (b) The streets comprised within the rectangle between Highway Route 1 and Beach Boulevard, and between Paloma Avenue and Clarendon Road in Sharp Park;
 - (c) Sharp Park Boulevard in Sharp Park;
 - (d) Reina del Mar Avenue in Vallemar;
 - (e) Rockaway Beach Avenue and Fassler Avenue in Rockaway Beach;
 - (f) Linda Mar Boulevard, Crespi Drive, and Oddstad Boulevard in Linda Mar.



T. 3 S.

T. 4 S.

GOLF COURSE

SAN FRANCISCO

JAIL SITE

Mori Point

Quarry

Calera

Valley

Water Tank

Vallemar

PACIFICA

Rockaway Beach

BM 68

Cattle Hill

S A N P E D R O

Quarry

Pekto's Expedition
Historical Marker

Cabin

Water Tank

Water Tank

SANCHEZ

BM 1220

r Cove

Sewage
Disposal

Pedro Valley

San Pedro

Sanchez Adobe

Water Tank

Linda Mar
Sch

Valley

BOULEVARD

Creek

North

13

Noise N-6

40'

4168

4167

4166

420 000
FEET

4165

O
C
E
A
N



M. A. G. CONSULTANTS, INC.

(I. Noise from sources on the ground, continued)

4. The "noise of living," including the noise from gardening and landscaping, music, loud human conversation, animal voices, and other, frequently unidentifiable, household and street noises which form the so-called "residual noise" background, above which the identifiable major noise sources rise and fall.
5. Some identifiable noises that are regarded as unnecessary and abatable by most residents, such as the noise of a gun range, motorcycles that are not adequately silenced or have been altered to render them even noisier, etc.
6. The oceanic surf, generally noticeable only in the still of the night, which does not attain a community noise equivalent level that would influence either the land-use planning or the structural design or construction of residences in the City of Pacifica.

II. Aircraft Noise.

The most severe aircraft noise exposure in the City of Pacifica is centered upon the Fairmont Park district of Edgemar, in the northern hilly portion of Pacifica. Most of the aircraft noise experienced there emanates from the overflight of aircraft departing from Runways 28-Left and 28-Right of the San Francisco International Airport. Less intense, but equally prolonged, overflights originate from departures from Runways 01 at the San Francisco International Airport and from Oakland Runway 29 in the East Bay.

The noise created by overflights from Runways 28 at the San Francisco International Airport is attributable to the use of Runways 28 when one of two wind conditions prevails, namely:

- (a) When a strong westerly wind renders impracticable takeoffs on Runways 01 because of an excessive crosswind component;
- (b) When a westerly wind has an appreciable southerly velocity component, thereby impeding takeoffs from Runways 01 because of an excessive tailwind component.

When overflights of the Edgemar-Fairmont District occur from Runway-28 departures during periods of strong westerly winds, and the climbing aircraft can gain altitude steeply in the prevailing headwind, noise levels in Pacifica are generally tolerable; maximum noise levels from even the noisiest older jets do not exceed approximately 75 dB(A); noise levels of more modern, quieter, aircraft, such as the DC-10 and the L-1011, remain below 65 dB(A) in the Edgemar-Fairmont District in such circumstances.

During gentle southwesterly wind conditions, in which aircraft are not boosted aloft by a strong headwind component, overflights in the Edgemar-Fairmont District generate noise levels 10 to 15 dB higher and may exceed the limits of reasonable tolerance.

Some of the most aggravating overflight noise exposures occur generally during the midday hours on days when there is a weak westerly wind. During such days virtually all San Francisco departures take off from Runways 01 (the runways pointing northward toward the San Francisco Bay), but when two or three extremely heavy and noisy trans-Pacific departures cannot be accommodated by the relatively short Runway 01-Right,

(II. Aircraft Noise, continued)

because that runway is marginally short by a few hundred feet (9,500 feet are available for DC-8's and Boeing 707's, and 9,000 feet for Boeing 747, DC-10, and L-1011 aircraft) for such aircraft at extremely high gross weights, they are diverted to Runways 28 for their takeoffs. Runway 28-Right offers a runway length approximately 3,000 feet greater than Runway 01-Right, and Runway 28-Left is only slightly shorter than Runway 28-Right, but longer than Runway 01-Right.

During late evening and early morning periods, when there is a gentle westerly breeze with a moderate southerly component, a few exceedingly noisy overflights over or near the Fairmont District occur, because the southerly tailwind component precludes the use of the relatively short Runways 01 by such heavy aircraft. Regrettably, the modest overall wind velocity and the downwardly directed vertical component of such a wind in the San Bruno Gap do not favor a steepening of the westward climb of Runway-28 departures in such wind conditions, and the noise impact on the Fairmont District can extend throughout the "evening rush" between 9:00 p.m. and 11:00 p.m., or even into the early post-midnight hours.

When heavy trans-Pacific cargo-aircraft departures find themselves obliged to take off from Runways 28, two or three intense noise events occur during approximately 3 percent of the nights, between the hours of 1:00 a.m. and 3:00 a.m.

In regarding the impact of these noisy departures on the City of Pacifica, it should be noted that both the airlines and virtually all of the airline pilots will make takeoffs on Runways 28 only as a last resort in wind conditions which render the safety of a takeoff on Runway 01-Right questionable. However, as described herein in the Section on Recommended Objectives (Section I-9), the situation can be alleviated by the City of Pacifica and its nearby sister cities through actions which should not burden the airlines or their pilots, but would actually facilitate their task and enhance its margin of safety.

Methodology Employed for Noise Measurement and Noise Calculation.

The measure of noise in the Noise Element for the City of Pacifica has been expressed in terms of the "Community Noise Equivalent Level (CNEL)." The CNEL is defined in Title 4, Subchapter 6, Section 5006, of the California Administrative Code. We refer to the "Noise Glossary," at the end of BOOK ONE, for further clarification.

The CNEL for the three primary noise sources that affect the City of Pacifica has been obtained by the following means and methods:

1. Freeways and Other Numbered State Routes:

The noise-contour maps provided by the Division of Highways of the California Department of Transportation (CalTrans), showing values of the ten-percent exceedence level, L_{10} , were translated into CNEL values through the use of an appropriate formula.

Actual measurements were then made to ascertain and verify the validity of the CNEL values that were thus obtained.

(continued)

(Methodology Employed for Noise Measurement and Noise Calculation, continued)

2. City Streets With Peak-Hour Traffic Volume of Over 200 Vehicles:

Actual noise measurements were made at a number of representative stations, and standard calculation methods, reflected in the Technical Report, BOOK TWO, were applied to obtain CNEL values for hourly traffic data that were supplied by the Community Development and Engineering Departments of the City of Pacifica and the County of San Mateo. Please refer also to the Appendix on "Traffic Noise Data" at the end of BOOK ONE.

3. Aircraft:

Actual measurements were made at numerous locations throughout the City. Use was also made of calculations made by consultants for the City of South San Francisco (including M.A.G. Consultants, Inc.), the San Francisco International Airport, and the Association of Bay Area Governments.

The noise monitoring included the collecting of cumulative statistical noise distributions according to the share of time at which certain decibel levels prevail in a given location, and were also based on detailed analyses of individual noise events monitored and recorded by the noise-monitoring team.

The totals obtained by weighted summation throughout the 24 hours of the day were used to determine and/or verify the overall cumulative statistical CNEL values.

1975 NOISE CONTOURS.

In compliance with the provisions of California Government Code Section 65302(g), and by an expansion beyond the relatively narrow scope of said provisions, contours have been drawn and included in this Noise Element to pass through points having uniform CNEL values at 5-dB intervals on two sets of graphs which, in full scale, comprise transparent noise-contour mylar overlays for the San Mateo 400-foot-to-the-inch orthophoto air photographs, terrain contour charts, and street maps.

One set comprises contours of equal community noise equivalent levels (CNEL) produced by the dominant noise sources on the ground, namely, the transportation noise sources on roads, highways, and streets, in combination with the diffused urban roar inherent in other human activities.

A second set comprises contours of equal annual CNEL attributable to aircraft noise. Inasmuch as the annual aircraft-generated CNEL has a marked two-season fluctuation that is controlled by the wind-conditioned utilization of runways at the San Francisco International Airport for takeoff, the set of annual CNEL contours should be understood to depict CNEL values that are approximately 3 dB higher during the "summer season" (May through September) and approximately 10 dB lower during the "winter season" (October through April). Thus, for example, the "70-dB annual-CNEL" contour represents the "73-dB summer-CNEL" and the "60-dB winter-CNEL" contours, also.

(1975 Noise Contours, continued)

Because of the large size of the two sets of CNEL contours at a scale of 400 feet per inch and the mechanical difficulty and cost of the inclusion of such large charts in the present Noise Element, the full-scale charts have been deposited with the Community Development Department of the City of Pacifica for public inspection. Reproductions of the "Ground-Noise-CNEL" contours, at a scale of 1,000 feet per inch, and a page-size chart of the aircraft-noise CNEL contours currently adopted by the Airport Land Use Commission of the County of San Mateo as part of the Interim Airport Land Use Plan, are included in the present BOOK ONE.

For reasons that become self-evident in the Technical Report (BOOK TWO), it has not been found practicable or useful to draw sets of comprehensive charts showing the combined total of the ground-source-produced and the aircraft-produced CNEL values throughout the City of Pacifica. A simple and dependable methodology is provided in Section XII (BOOK TWO) for the summation of CNEL's derived from noise sources on the ground and CNEL's derived from aircraft flight activities.

FUTURE NOISE CONTOURS

For reasons set forth in Sections VI and XIV (BOOK TWO) it is concluded that the following overall changes in the numerical values of the CNEL's in the City of Pacifica will be attained by 1985 and 1995, without, however, any significant alteration in the geometric shapes of the CNEL contours:

<u>Source of Noise:</u>	<u>CNEL in 1985:</u>	<u>CNEL in 1995:</u>
Total road traffic	5 dB less than in 1975	7 dB less than in 1975
Railroad traffic (if any)	7 dB less than with 1975 technology	10 dB less than with 1975 technology
Aircraft flight operations (primarily with reference to the San Francisco International Airport)	8 dB less than in 1975	12 dB less than in 1975.

NOISE-LEVEL COMPATIBILITY CRITERIA FOR LAND-USE PLANNING.

With reference to land-use planning, it is concluded that the City of Pacifica is relatively free from heavily intrusive, irremovable, noise impact.

With the exception of narrow bands of land alongside the Cabrillo Freeway and Highway (Route No.1), the Skyline Boulevard (Route 35), and Sharp Park Road, all of the City of Pacifica is suitable for residential development, so far as prevailing noise levels are concerned. The quietest area in the City of Pacifica appears to be the hillslope area comprised between Sharp Park Road, the Milagra Creek, and the Laguna Salada district, and the hilly terrain overlooking Vallemar and Park Pacifica.

Aircraft flight noise decreases progressively from North to South. Hence, the lowest overall noise exposure, from the point of view of planning for extremely noise-sensitive land uses, such as rest and convalescent homes, would appear to prevail in the more southerly located hilly terrain of the City.

Translating and condensing the findings discussed in the EPA "Levels Document" and extant California State Regulations into criteria directly applicable to areas in Northern San Mateo County, such as the City of Pacifica, that are exposed to noise, partly from surface transportation, partly from aircraft, and otherwise, the following specific noise-level compatibility criteria apply to land-use planning within the city limits of the City of Pacifica:

Open Space / Agriculture	Satisfactory in any noise-exposure area.
Livestock	Satisfactory in areas of up to 75 dB CNEL. Should be avoided in areas with more than 75 dB CNEL.
Industrial	Satisfactory in areas of up to 70 dB CNEL. In areas with 70 to 80 dB exterior CNEL, noise insulation should be provided to maintain interior L_{eq} (8-hour) not in excess of 55 dB in areas where people work continuously on tasks not related to noisier interior activities. * To be avoided in areas with more than 80 dB CNEL.
Commercial (including offices)	Satisfactory in areas of up to 65 dB exterior CNEL. In areas with 65 to 75 dB CNEL, noise insulation should be provided to maintain interior L_{eq} (8-hour) not in excess of 50 dB in areas where people work continuously on clerical and office tasks not related to any noisier interior activities. * To be avoided in areas with more than 75 dB CNEL.
Recreational	Satisfactory in areas of up to 65 dB exterior CNEL. In areas with 65 to 75 dB CNEL, noise insulation should be provided to maintain interior L_{eq} (hr.) or HNL not in excess of 55 dB. *

* There is no State-regulated noise-insulation requirement for this category of buildings.

(Noise-Level Compatibility for Land-Use Planning, continued)

Schools with exterior play yards.	Satisfactory in areas of up to 65 dB CNEL. In areas of up to 70 dB CNEL, noise insulation should be provided to maintain interior L_{eq} (school hrs.) not in excess of 50 dB. *										
Institutions of Learning without exterior play yards, Churches, Libraries, Cultural Centers.	Satisfactory in areas of up to 65 dB CNEL. Should be avoided in areas with more than 65 dB CNEL. Noise insulation should be provided to maintain interior L_{eq} during the hours of actual activity * as follows: <table> <tr> <td>Concert halls</td><td>25 dB.</td></tr> <tr> <td>School auditoriums and legitimate theaters</td><td>35 dB.</td></tr> <tr> <td>Church sanctuaries; motion picture theaters.</td><td>40 dB.</td></tr> <tr> <td>School classrooms and laboratories.</td><td>50 dB.</td></tr> <tr> <td>Libraries.</td><td>55 dB.</td></tr> </table>	Concert halls	25 dB.	School auditoriums and legitimate theaters	35 dB.	Church sanctuaries; motion picture theaters.	40 dB.	School classrooms and laboratories.	50 dB.	Libraries.	55 dB.
Concert halls	25 dB.										
School auditoriums and legitimate theaters	35 dB.										
Church sanctuaries; motion picture theaters.	40 dB.										
School classrooms and laboratories.	50 dB.										
Libraries.	55 dB.										
Residential dwellings and hospitals	Satisfactory in areas of up to 65 dB CNEL. Conditionally acceptable up to 70 dB CNEL, where permissible. In areas with more than 60 dB CNEL, noise insulation should be provided to maintain interior CNEL not in excess of 45 dB CNEL. The State of California requires this for multiple dwellings, pursuant to Title 25, Chapter 1, Subchapter 1, Article 4, Section 1092, of the California Administrative Code. ** Noise insulation to achieve 40 dB interior CNEL in sleeping areas is advisable, even though it is not legally required in California.*										

* There is no State-regulated noise-insulation requirement for this category of buildings.

** The California State Noise-Insulation Regulation cited above applies to habitable areas in dwellings other than single-family detached dwellings. Legislation has been suggested to extend the present noise-insulation regulation to single-family detached dwellings and to other non-residential, but habitable, areas in buildings.

PRACTICABLE STRUCTURAL IMPROVEMENTS FOR NOISE REDUCTION
FROM THE EXTERIOR TO THE INTERIOR IN NEW STRUCTURES.

Title 25, Section 1092, of the California Administrative Code specifies, in substance, that the community noise equivalent level (CNEL) prevailing in the interior of specified types of dwellings, attributable to exterior noise, shall not exceed 45 dB, and that an acoustical analysis of such dwellings shall be provided by a proponent in areas in which the exterior CNEL exceeds 60 dB, so that compliance may be assured.

Architects in general are sufficiently well informed to provide adequate means for noise reduction from the exterior to the interior, especially for dwellings and other buildings that are to be placed in an area of significant exterior noise impact. Also, the California Department of Housing and Community Development has been preparing a booklet on the specifics of sound insulation which should be of assistance to builders and building officials alike.

There remains, however, a need for qualitative information on typical practicable structural improvements that afford effective and economically bearable noise reduction from the exterior to the interior in new structures located in areas where the total exterior CNEL ranges approximately from 60 to 70 dB.

The following structural improvements are suggested from extensive experience:

1. Slab foundations, to preclude appreciable noise leakage into the ground floor from underneath.
2. No sliding doors on the side of a building that faces the principal source of noise. Sliding doors along the "noise-shadow" side and the sides of the building at approximately right angles to the principal noise source are generally acceptable, provided that they are sealed when closed.
3. Windows facing the principal noise source shall be equipped with special glass panes consistent with the noise exposure, if necessary. Windows facing the other directions may be made of ordinary glass, but their frames and openable panels shall be sealed when closed, as in all noise-exposed windows.
4. There shall be no jalousie-type windows.
5. Use of staggered studs, cavity-fill insulation, and thicker-than-one-half-inch sheet-rock or stucco shall be considered primarily for walls and roof-ceiling panels facing the principal noise source and only secondarily for walls siding at approximately 90 degrees to the principal noise source and for walls in the noise shadow.
6. Workmanship of exterior walls, ceilings, doors, and openable windows and glass doors shall be such as to avoid cracks and other openings. This may require caulking, for example, when overlaps of structural elements are not sufficient to bar a noise-flanking path.
7. Fireplace flues, if any, shall be equipped with a tightly closing damper.

(continued)

(Practicable Structural Improvements for Noise Reduction..., continued)

8. There shall be no direct openings from the exterior to the interior, such as mail slots, pet gates, or ordinary attic vents on the wall or roof facing in the direction of the principal noise source.
9. No metal pipes (for example, water pipes or other utility conduits) shall pass through an exterior wall or roof facing in the direction of the principal noise source.
10. There shall be no back-to-back metal boxes (for example, electric outlet or fuse boxes) in exterior walls facing the principal noise source.
11. All air ducts, connectors, and elbows shall contain an interior lining of fiberglass insulation at least one-half inch thick and at least five feet in length (or other acoustic insulation equivalent in duct-noise reduction effectiveness) just prior to any room delivery vent or exhaust vent. Where total duct length is less than five feet, fiberglass lining of the entire duct length is deemed to be sufficient.
12. All ceiling and exhaust ducts in rooms having a wall or roof that faces the principal noise source shall be provided with a bend in the duct so that there is no direct line of sight through the duct from the venting cross-section to the room-opening cross-section.
13. Each dwelling discussed herein shall be equipped with a manually operated switch to actuate the blower of the central ventilating system, to provide a complete hourly change of air at least equal to that required by the Uniform Building Code for rooms other than bathrooms, whenever a resident wishes to obtain interior ventilation with the windows closed, and wherever it cannot be shown, to the satisfaction of the City Building Official, that the prevailing wind, captured by an air intake, is adequate to provide the said rate of hourly air change without added blowing. It should be noted that the maximum noise level in interior dwelling spaces, created by the said central ventilating, must not exceed 40 dBA at the center of each respective room.
14. Allowance should be made for internal noise attenuation afforded by carpeting and furnishings in determining the exterior-to-interior noise reduction required. Wall-to-wall carpeting adds approximately 1 dB, and drapes and ordinary bedroom and living-quarter furnishings can increase interior noise attenuation from 1 to 3 dB.

*

SUMMARY OF OFFICIAL NOISE ELEMENT POLICIES

By adoption of this Noise Element as part of its General Plan, the City of Pacifica is adopting a set of official policies for dealing with noise abatement and for use in making future planning decisions. The present summary is intended to facilitate reference to official City policies set forth in the Noise Element so that they may be readily understood and consistently used for decision-making purposes. There are 25 specific policies listed under 9 logical goal headings as follows:

GOAL I.

ABATEMENT OF UNNECESSARY NOISE FROM AUTOMOTIVE VEHICLES.

Policy 1.

Enforce noise-emission standards, established by the California Vehicle Code and by Federal regulations, for all types of automotive vehicles.

Policy 2.

Reduce noise exposure levels in populated places produced by noise emission from heavy passenger buses.

Policy 3.

Reduce noise emissions from city-owned vehicles.

Policy 4.

Reduce traffic-noise impingement on two-story and multi-story dwellings by establishing criteria for setback of building lines and terracing or staggering of upper floors.

Policy 5.

Keep trucks off local residential (that is, other than arterial) streets as much as possible.

Policy 6.

Mitigate the environmental impact on the City of Pacifica from ground-access traffic to and from the San Francisco International Airport.

Policy 7.

Construct, or have constructed with support from the State of California, noise barriers along selected route segments of Freeway Route 1 and State Highway Route 35.

Policy 8.

Consider the construction of noise barriers along selected segments of streets in the City of Pacifica.

GOAL II.

ABATEMENT OF UNNECESSARY NOISE FROM FUTURE RAIL LINES.

Policy 1.

Participate in deliberations by regional planning and decision-making bodies on possible future extensions of rail lines to and through the City of Pacifica.

GOAL III.

ABATEMENT OF UNNECESSARY NOISE FROM INDUSTRIAL PLANTS.

Policy 1.

Reduce objectionable noise from industrial plants of any size (ranging from quarry operations to mechanical repair shops) or shield the community against such noise.

Policy 2.

Make the issuance of building permits for industrial plants contingent on an assurance that operation of the proposed plant will not increase excessively the annual exterior CNEL at the nearest residential site.

Policy 3.

Protect the people of the City of Pacifica against intrusions of industrial noise from outside the City of Pacifica.

GOAL IV.

ABATEMENT OF UNNECESSARY NOISE FROM MISCELLANEOUS SOURCES.

Policy 1.

Enforce Federal and State Noise Standards for all miscellaneous sources of noise in the City of Pacifica.

GOAL V.

ABATEMENT OF UNNECESSARY NOISE FROM AIRPORT AND FLIGHT ACTIVITIES.

Part One: The San Francisco International Airport (SFO).

Policy 1.

Abate unnecessary noise from the San Francisco International Airport and flights from and to that Airport affecting the City of Pacifica.

Policy 2.

Help to abate unnecessary noise from the San Francisco International Airport in the Cities of Millbrae, Burlingame, and Hillsborough.

Policy 3.

Help to minimize heavy departures from SFO Runways 28.

Policy 4.

Favor minimization of nighttime departures and the avoidance of scheduling of new nighttime departures at the San Francisco International Airport.

M. A. G. CONSULTANTS. INC.

(GOAL V. Abatement of Unnecessary Noise From Airport and Flight Activities.

Part One: The San Francisco International Airport (SFO), continued)

Policy 5.

Participate in environmental impact evaluation of proposed residential developments in areas currently exposed to noise from "Shoreline departures" from SFO Runways 28-L and 28-R, and from "PORTOLA departures" from SFO Runways 01-L and 01-R.

Policy 6.

Require abatement of unnecessary noise from sustained test runs and runups of aircraft engines on the ground.

Part Two: The Naval Air Station Alameda (NGZ).

Policy 7.

Urge the abatement of unnecessary noise attributable directly or indirectly to the activities of the Naval Air Station Alameda and flights to and from NGZ affecting the City of Pacifica.

Part Three: The Oakland Airport (OAK).

Policy 8.

Require the abatement of unnecessary noise from the Oakland Airport and flights to and from that airport affecting the City of Pacifica.

GOAL VI

ADOPTION OF A CITY BUILDING NOISE-INSULATION ORDINANCE.

Policy 1.

Adopt a City Noise-Insulation Ordinance for dwellings.

GOAL VII.

INCLUSION OF NOISE CONSIDERATIONS IN ALL FUTURE LAND-USE DECISIONS.

Policy 1.

Establish guidelines to assist the City Planning Department in making staff proposals for future land-use decisions, and to assist the Planning Commission and the City Council in evaluating them.

GOAL VIII.

PROTECTION OF NOISE-ABATEMENT FLIGHTPATHS BY ESTABLISHING HEIGHT LIMITATIONS FOR PROPOSED BUILDINGS AND OTHER STRUCTURES.

Policy 1.

Preserve the existing noise-abatement flightpaths at the San Francisco International Airport through the establishment of maximum permissible elevations of proposed buildings and other structures within all of the cities adjacent to the Airport.

GOAL IX.

PROTECTION OF NOISE-ABATEMENT FLIGHTPATHS BY CONTROLLING
LIGHT SOURCES AND LIGHT REFLECTIONS WITHIN THE CITY OF PACIFICA
TO AVOID DISORIENTATION OF PILOTS.

Policy 1.

Establish, by ordinance of the City Council, regulations that prohibit the erection or operation, within the City of Pacifica, of any object that could cause a pilot engaged in a noise-abatement climb or descent from or to the San Francisco International Airport to become disoriented by exposure to reflected or emitted light of an objectionable intensity.

*

Section I
Goals, Policies, Programs and
Official Positions and Recommendations

Section 1.

GOALS, POLICIES, PROGRAMS, AND
OFFICIAL POSITIONS AND RECOMMENDATIONS.

This portion of the Noise Element for the General Plan of the City of Pacifica is an abridged agenda, that is, a list of action items, for the reduction of abatable noise and for community planning in the presence of unabatable noise, for the benefit of the City of Pacifica.

The background of each action item, the reason for the need for its resolution, and a summary of benefits to be derived from its implementation will be found in the full text of BOOK TWO, with especial reference to Section II therein.

The action items are classified as follows:

1. Goals. The objectives to be achieved.
2. Policies. The general courses of action and methods whereby the City should seek to achieve the goals or objectives.
3. Programs. The specific courses of action that the City, its governing body, its commissions and boards, and its management and administration should pursue to implement the adopted policies within its own sphere of jurisdiction and responsibility.
4. Official Positions and Recommendations. The specific courses of action that the City wishes to cause other governmental agencies to adopt and pursue in a common endeavor to achieve goals that are of mutual benefit.
5. References. References are made to applicable Sections in BOOK TWO.

Grading of the planning elements with respect to their presumable degree of urgency, effectiveness, and hoped-for benefits has been given much thought. In matters of noise it is clearly impossible to satisfy everybody. Noise to one person may be pleasing sound to another person; among three neighbors, one may complain primarily about the noise from aircraft, the second may find the barking of dogs far worse than the noise from the aircraft, and the third may lay the blame for the barking of the dogs on the disturbance which the aircraft noise apparently inflicts on the dogs. The only reasonable conclusion is that comprehensive corrective actions are needed.

The sequential listing in this Noise Element of Planning Goals, Policies, Programs, and Official Positions and Recommendations follows a logical technical order and is not intended to serve as a priority list. Action programs with specific work schedules should be established subsequently.

The analysis of each goal and each topic thereunder is founded on the apparent weight of the respective noise impingement on the citizens and residents of the City of Pacifica as perceived from the views expressed by citizens of Pacifica on the record during the "Public Noise Forum" hearing at the City Council Chambers in the City of Pacifica on July 9, 1975, an inspection of recent sample complaint-record sheets of the City of Pacifica Police Department, an interview with the manager of the Pacifica office of the Animal Advisory Committee, and numerous personal interviews with citizens of Pacifica during noise-monitoring periods throughout the City, as well as from various recommendations made during the Spring of 1976 by the Staff of the Community Development Department of the City of Pacifica.

M. A. G. CONSULTANTS, INC.

The Statement of Goals, Policies, Programs, and Official Positions and Recommendations is set forth to enable the City of Pacifica to develop therefrom and to formulate and update, as necessary:

1. Action programs and checklists of action items in the approximate order of importance and need.
2. Action programs that reflect the practical feasibility of a realistic implementation schedule.

GOAL I.

ABATEMENT OF UNNECESSARY NOISE FROM AUTOMOTIVE VEHICLES.

Policy 1.

Enforce noise-emission standards established by the California Vehicle Code and by Federal regulations for all types of automotive vehicles.

Program 1(1).

Establish means for -

- (a) an identification of apparent violators;
- (b) a verification of noise levels produced by identified vehicles;
- (c) a verifiable and certifiable correction of any defect.

This could be accomplished, in part, by the acquisition and use of an inexpensive A-weighted noise-level meter and the setting up of a standard noise-level-measuring area at or near the parking lot of the Police Department. Two or three officers could be trained in the correct use of the noise-level meter; the meter should be calibrated at regular (for example, bi-monthly) intervals.

Reference: BOOK TWO; Section II, Topic I-1; Page II-3.

Policy 2.

Reduce noise-exposure levels in populated places produced by noise emissions from heavy passenger buses.

Program 2(1).

Reduce emissions on any city-owned buses by suppressing engine noise and exhaust noise.

Program 2(2).

Adhere to the present policy of the City of Pacifica of placing bus stops so that braking and initial-accelerating noise of the vehicles does not impinge directly on main entrance doors and large windows of schools and other places where large numbers of people congregate to communicate by speech.

Program 2(3).

Provide means for traffic control to maintain a smooth flow of traffic on main thoroughfares adjacent to school sites and other places of mass assembly; discourage cross traffic at intersections near such sites.

Official Position and Recommendation 2(4).

Urge operators of buses to reduce unnecessary noise emissions from engines and exhaust mufflers.

Reference: BOOK TWO; Section II; Topic I-2; Page II-4..

Policy 3.

Reduce noise emissions from city-owned vehicles.

Program 3(1).

Establish noise criteria for evaluation of vehicles offered for sale to the City.

Program 3(2).

Verify the actual noise performance of city-owned vehicles as part of the routine maintenance schedule. Establish maximum noise levels as a criterion for repair or replacement of components.

Reference: BOOK TWO; Section II; Topic I-3; Page II-4.

Policy 4.

Reduce traffic-noise impingement on two-story and multi-story dwellings by establishing criteria for setback of building lines and terracing or staggering of upper floors.

Program 4(1).

Establish building-setback and terracing and staggering criteria for each road and street along which the present or highest future CNEL exceeds 70 dB CNEL at the curbline.

Reference: BOOK TWO; Section II; Topics II-1(c) and II-1(d); Page II-13.

Policy 5.

Keep trucks off local residential streets (other than arterials) as much as possible.

Program 5(1).

Establish and update at regular intervals a system of truck routes through the City and establish and maintain a restriction against use of local residential streets (other than arterials) by transiting trucks for more than a limited number of blocks.

Reference: BOOK TWO; Section II; Topic II-1(a); Pages II-11 through II-13.

Policy 6.

Mitigate the environmental impact on the City of Pacifica from ground-access traffic to and from the San Francisco International Airport.

Official Position and Recommendation 6(1).

Establish and maintain an official position of the City of Pacifica before county and regional decision-making bodies so that the mitigating measures to be afforded the environmental impact of an enlarged passenger volume of the San Francisco International Airport include at least the following:

1. At least one-fourth of the present seventeen million annual passengers to be transported to and from the Airport by collective or mass transit.
2. All passengers over seventeen million annual passengers be transported to and from the Airport by collective or mass transit.

This position is substantially consistent with the current criteria set for A-95 approvals for the San Francisco International Airport by the Association of Bay Area Governments (ABAG) and the Metropolitan Transportation Commission (MTC).

Reference: BOOK TWO; Section II; Topic II-1(b); Pages II-11 through II-13.

M. A. G. CONSULTANTS, INC.

(GOAL I, continued)

Policy 7.

Construct, or have constructed with support from the State of California, noise barriers along selected route segments of Freeway Route 1 and State Highway Route 35.

Program 7(1).

Request consideration by the State of California of requests for noise barriers along freeway route segments specified in Section II, Topic III-1(a), of BOOK TWO of this Noise Element, pursuant to the circular letter from the California Department of Transportation, dated January 9, 1975, entitled, "Proposed Noise Attenuation Projects on Existing Freeways."

Reference: BOOK TWO; Section II; Topic III-1(a); Page II-27 and II-28.

Policy 8.

Consider the construction of noise barriers along selected segments of streets in the City of Pacifica.

Program 8(1).

Initiate a program for the investigation of acoustic needs and effectiveness, aesthetic aspects, and possible security problems of noise barriers along selected segments of streets in the City of Pacifica, and also along portions of frontages of schools and other public buildings.

Reference: BOOK TWO; Section II; Topic III-1(b); Pages II-28 and II-29.

GOAL II.

ABATEMENT OF UNNECESSARY NOISE FROM FUTURE RAIL LINES.

At present, there are no general-service rail lines in the City of Pacifica. However, the introduction of future rail transit lines in and through the City of Pacifica is not to be excluded or overlooked. Hence the following policy recommendations:

Policy 1.

Participate in deliberations by regional planning and decision-making bodies on possible future extensions of rail lines to and through the City of Pacifica.

Official Position and Recommendation 1(1).

Enlist the co-operation of possible future rail-transit operators to ensure the attainment of the following objectives:

1. Compliance with applicable Federal and State standards of all rolling stock employed.
2. Maintenance of roadbed, rail joints, switches, frogs, etc., to avoid excessive wheel-to-rail-to-roadbed noises and vibrations.
3. Minimal use of acoustical signals that can be heard over an unnecessarily large area.

Reference: BOOK TWO; Section II; Topic I-5; Page II-6.

(continued)

(GOAL II, Policy 1, continued)

Official Position and Recommendation 1(2).

The CNEL comprising the rail-line noise in residential areas is not to exceed 65 dB through the employment of horizontal or vertical separation of the roadbed from existing noise-sensitive land uses, and/or by lateral roadbed shielding.

Reference: BOOK TWO, Section II, Topic II-2(b); Page II-14.

GOAL III.

ABATEMENT OF UNNECESSARY NOISE FROM INDUSTRIAL PLANTS.

Policy 1.

Reduce objectionable noise from industrial plants of any size (ranging from quarry operations to mechanical repair shops) or shield the community against such noise.

Official Position and Recommendation 1(1).

Enlist the co-operation of existing industrial plants to abate noise at the source or to set up protective noise barriers around prominent noise sources. The cost of abating noise should be borne by the noise-maker.

Reference: BOOK TWO; Section II; Topics 1-6 and III-3; Pages II-7 and II-29.

Official Position and Recommendation. 1(2).

Enlist the co-operation of existing industrial plants to replace the bullhorns, paging loudspeakers, and miscellaneous noisy horns and whistles with acoustical signals that are audible only by those for whom the signal is intended.

Reference: BOOK TWO; Section II; Topic I-6; Page II-7.

Policy 2.

Make the issuance of building permits for industrial plants contingent on an assurance that operation of the proposed plant will not increase excessively the annual exterior CNEL at the nearest residential site.

Program 2(1)

Require, by ordinance, that plan approvals and building permits for new industrial plants within the City be made contingent on a certified assurance that the proposed facility will not cause the total annual CNEL in any existing owner-occupied dwelling to rise above 65 dB, or more than 3 dB above the CNEL prevailing there at the time of the application, whichever is lower. It is suggested that this requirement be incorporated in a City Noise Ordinance.

Reference: BOOK TWO; Section II; Topic II-3; Page II-15.

Policy 3.

Protect the people of the City of Pacifica against intrusions of industrial noise from outside the City of Pacifica.

(continued)

M. A. G. CONSULTANTS, INC.

(GOAL III, Policy 3, continued)

Official Position and Recommendation 3(1).

Request that Noise Elements of adjacent cities and Environmental Impact Reports and Environmental Impact Statements for proposed projects in adjacent cities describe and disclose fully and fairly any significant noise impact on the City of Pacifica.

Program 3(2).

Respond to EIR's and EIS's with critique and constructive recommendations for noise-mitigating measures, and move their adoption before the respective decision-making bodies.

Reference: BOOK TWO; Section II; Topic II-4; Page II-15.

GOAL IV.

ABATEMENT OF UNNECESSARY NOISE FROM MISCELLANEOUS SOURCES.

Policy 1.

Enforce Federal and State Noise Standards for all miscellaneous sources of noise in the City of Pacifica.

Program 1(1).

Maintain an up-to-date listing of current Federal and State noise regulations at the Community Development Department of the City of Pacifica.

Program 1(2).

Encourage citizens to report the detection and identification of objectionably intense noise sources to the City of Pacifica.

Program 1(3).

Establish a procedure to verify violations and achieve and certify corrective compliance with existing standards.

Reference: BOOK TWO; Section II; Topic I-4; Page II-5.

GOAL V.

ABATEMENT OF UNNECESSARY NOISE FROM AIRPORT AND FLIGHT ACTIVITIES.

Part One: The San Francisco International Airport (SFO).

Policy 1.

Abate unnecessary noise from the San Francisco International Airport and flight activities from and to that Airport affecting the City of Pacifica.

Official Position and Recommendation 1(1).

Urge the City and County of San Francisco through its Airports Commission to adopt, by resolution, an operating policy and regulations limiting the use of the Airport to aircraft certificated in accordance with Federal Aviation Regulations Part 36 (FAR 36) by a date certain.

Reference: BOOK TWO; Section II; Topic II-5(a)(1); Page II-17.

(GOAL V, continued)

Official Position and Recommendation 1(2).

Urge the City and County of San Francisco through its **Airports Commission** to implement noise-monitoring and disciplinary measures to enforce **operation of aircraft to achieve actual compliance** with the noise-exposure levels specified in **FAR 36, Appendix C**.

Reference: BOOK TWO, Section II; Topic II-5(a)(2); Page II-18.

Official Position and Recommendation 1(3).

Urge the Environmental Protection Agency, the Federal Aviation Administration, and the airlines to adopt and implement, if necessary, more than one **alternative noise-abatement climb procedures**, designed to afford optimal noise abatement for a "close-in" area (up to three nautical miles from the end of the takeoff runway), an "intermediate" area (three to six nautical miles from the end of the takeoff runway), and a "distant" area (more than six nautical miles from the end of the takeoff runway). the last procedure being designated as the "best-climb" procedure.

Official Position and Recommendation 1(4).

Urge the airlines and the FAA air-traffic-control system to **adopt** and maintain a "best-climb" procedure for all departures from SFO Runways 01.

Official Position and Recommendation 1(5).

Urge the airlines and the FAA air-traffic-control system to **adopt and maintain** a "close-in" or an "intermediate" noise-abatement climb procedure for straight-out departures from Runways 28.

Reference: BOOK TWO; Section II; Topic II-5(a)(3); Page II-19.

Official Position and Recommendation 1(6).

Urge the Federal Aviation Administration (FAA) to enforce left-turn paths for southbound departures from SFO Runways 01 that will cause all aircraft to re-cross the City of Pacifica at or above 7,000 feet altitude above mean sea level (msl).

Official Position and Recommendation 1(7).

Urge the FAA to continue to explore practicable southbound paths from SFO over the waters of the San Francisco Bay, whenever their use is safe and practicable.

Reference: BOOK TWO; Section II; Topic II-5(a)(4); Page II-20.

Policy 2.

Help to abate unnecessary noise from the San Francisco International Airport in the Cities of Millbrae, Burlingame, and Hillsborough.

Official Position and Recommendation 2(1).

Urge the Airports Commission of the City and County of San Francisco, the FAA, and the airlines, to make all practicable and effective provisions for an alleviation of the noise burden of the City of Millbrae and other cities south of the Airport.

Reference: BOOK TWO; Section II; Topic II-5(a)(5); Page II-21.

Policy 3.

Minimize heavy departures from SFO Runways 28.

Official Position and Recommendation 3(1).

Urge the Airports Commission of the City and County of San Francisco and the FAA to extend the length of Runways 01 (or, at least, Runway 01-Right) by the following two, or other equivalent, measures:

1. Construction of an effective jet-blast deflector at the physical threshold of Runway 01-Right, so that full thrust application can be made there without disturbing automobile traffic on Bayshore Freeway, and thereby gaining approximately 600 feet in usable runway length.
2. A northward extension of Runway 01-Right and, if possible, Runway 01-Left.

Such improvements will avert numerous takeoffs from Runways 28 with subsequent shallow, low, laborious, and noisy overflights of residences in the Edgemar-Fairmont district of the City of Pacifica and the San Bruno Gap. Both the noise and the accident potential of Runway-28 departures will thus be eliminated.

Such improvements will also permit numerous takeoffs on Runways 01 to proceed with reduced (so-called "normal") takeoff thrust, instead of "maximum" takeoff thrust, with resulting noise abatement for Millbrae and cities south therefrom.

The improvements intended for an effective lengthening of Runways 01 should be coupled with the construction of means for the effective shielding of parts of Millbrae and Burlingame from primary-jet noise from departing aircraft on Runways 01, and for the scattering of some of that noise in that area just south of Runways 01, which currently acts as a reflector bowl, an improvement that would benefit significantly the Cities of Millbrae, Burlingame, and Hillsborough.

Reference: BOOK TWO; Section II; Topic II-5(a)(6); Page II-21.

Policy 4.

Favor minimization of nighttime departures and the avoidance of scheduling of new nighttime departures at the San Francisco International Airport.

Official Position and Recommendation 4(1).

Urge, in all decision-making bodies, that nighttime departures be minimized and that the use of "quiet" aircraft be required in nighttime departures.

Reference: BOOK TWO; Section II; Topic II-5(a)(7); Page II-23.

Policy 5.

Participate in the environmental-impact evaluation of proposed residential developments in areas currently exposed to noise from "Shoreline departures" from Runways 28-L and 28-R, and from "PORTOLA departures" from Runways 01-L and 01-R at SFO.

Official Position and Recommendation 5(1).

Urge the developers, the City and County of San Francisco through its Airports Commission, and the County of San Mateo through its Airport Land Use Commission, to give adequate assurance that the following protective measure will be carried out:

M. A. G. CONSULTANTS, INC.

(GOAL V, Policy 5, Official Position and Recommendation 5(1), continued)

1. The City and County of San Francisco would agree to its faithful performance of specified measures to achieve noise abatement in the proposed project area;
2. The developer, on his own behalf and on behalf of his successors, lessees, and assigns, would guarantee the implementation of certain improvements in the structural noise reduction, orientation, and design features in the proposed buildings and would grant the City and County of San Francisco (as the owner and operator of the San Francisco International Airport), an aviation easement and a conditional noise easement over any and all parts of the project.

Reference: BOOK TWO; Section II; Topic II-5(a)(8); Page II-23.

Policy 6.

Abate unnecessary noise from sustained test runs and runups of aircraft engines on the ground.

Official Position and Recommendation 6(1).

Urge owners and operators of aircraft-engine test cells and test stands to ensure that noise levels of 50 dBA attributable to maximum-power runs not be exceeded at any residence within the City at any time.

Official Position and Recommendation 6(2).

Urge owners and operators of airport facilities to enforce rules for on-aircraft engine runups, prohibiting high-power jet-engine runups at night, and prohibiting runups near residential areas at any time, unless engine noise suppressors are used to limit sustained noise levels at the nearest residence to 50 dBA.

Reference: BOOK TWO; Section II; Topic I-7(b); Page II-9.

Part Two: The Naval Air Station Alameda (NGZ).

Policy 7.

Abate unnecessary noise attributable directly or indirectly to the activities of the Naval Air Station Alameda and flights to and from that Base affecting the City of Pacifica.

Official Position and Recommendation 7(1).

Encourage the continuation of the present coordination of activities between the Federal Aviation Administration and the Naval Air Station Alameda air-traffic control toward a minimization of a noise impact of such activities on the City of Pacifica.

Reference: BOOK TWO; Section II; Topic II-5(b); Page II-24.

Part Three: The Oakland Airport (OAK).

Policy 8.

Abate unnecessary noise from the Oakland Airport and flights to and from that airport affecting the City of Pacifica.

Official Position and Recommendation 8(1).

Urge the City of Oakland, through its Board of Port Commissioners, to adopt, by resolution, an operating policy and regulations limiting the use of the Oakland Airport to aircraft certificated in accordance with FAR 36 by a date certain.

M. A. G. CONSULTANTS, INC.

(GOAL V, Policy 8, continued)

Reference: BOOK TWO; Section II; Topic II-5(c)(1); Page II-25.

Official Position and Recommendation 8(2).

Urge the airlines to have those Oakland aircraft engaged in a departure climb over or west of the San Francisco International Airport follow a "best-climb" procedure, in order that they cross the City of Pacifica as high and as quietly as possible.

Reference: BOOK TWO; Section II; Topic II-5(c)(2); Page II-26.

Official Position and Recommendation 8(3).

Urge the airlines and the FAA to enable westflow departures from the Oakland Airport engaged in a departure climb over or west of the San Francisco International Airport to gain altitude as steeply as practicable, and to refrain from the imposition of avoidable altitude restrictions during that climb.

Reference: BOOK TWO; Section II; Topic II-5(c)(3); Page II-26.

Official Position and Recommendation 8(4).

Urge the FAA to develop safe and practicable southbound and southeastbound routes from the Oakland Airport over the water of the San Francisco Bay.

Reference: BOOK TWO; Section II; Topic II-5(c)(4); Page II-26.

GOAL VI.

ADOPTION OF A CITY BUILDING NOISE-INSULATION ORDINANCE.

Policy 1.

Adopt a City Noise-Insulation Ordinance for dwellings.

Program 1(1).

Adopt a Noise-Insulation Ordinance consistent with Title 25, Section 1092, of the California Administrative Code.

Program 1(2).

Consider the inclusion of the energy-conservation provisions of Section 1092 in the Noise-Insulation Ordinance, thereby broadening it into an Energy- and Noise-Insulation Ordinance.

Program 1(3).

Consider the advisability of amplifying the Noise-Insulation Ordinance (or Energy- and Noise-Insulation Ordinance) beyond the scope of current State Law, with regard to two alternatives, namely:

1. Inclusion of single-family dwellings which are constructed as part of a subdivision requiring a final subdivision map and which are located within a high-exposure noise area. (A sample draft is attached as an Exhibit to BOOK TWO, Section II, of this Noise Element).
2. Inclusion of all detached single-family dwellings.

M. A. G. CONSULTANTS, INC.

(GOAL VI, Policy 1, continued)

Program 1(4).

Provide a simple booklet for the guidance of individual builders of single-family detached dwellings to achieve noise reduction and cooling-and-heating energy conservation at the least cost.

Reference: BOOK TWO; Section II; Topic IV-1; Page II-30.

Program 1(5):

Include the establishment of noise-insulation requirements for non-residential buildings, such as office buildings, schools, institutional buildings of all kinds, and industrial plants in the guidelines of the City of Pacifica for environmental impact reports.

Reference: BOOK TWO; Section II; Topic IV-2; Page II-30.

Official Position and Recommendation 1(7).

Provide guidelines and recommendations to school authorities relative to noise-insulation requirements for existing and proposed schools.

Include in the above-described proposed Noise-Insulation Ordinance a requirement that all proposed buildings intended for human occupancy that are to be located in a band 4,000 feet wide, centered upon a straight line midway between the extended centerlines of Runways 28 at the San Francisco International Airport, said straight line being defined by the Radial 281 of the San Francisco Visual Omnirange (VOR) transmitter, must be free of structural elements that have a proper vibrational frequency of 100 Hz or less. In practical terms this would limit the maximum size of individual picture-window panels as a function of their thickness and the structural support of the glass panels, and would oblige architects and builders to provide suitable stiffening strips for large ceiling panels.

GOAL VII

INCLUSION OF NOISE CONSIDERATIONS IN ALL FUTURE LAND-USE DECISIONS.

Policy 1.

Establish guidelines to assist the Planning Department in making staff proposals for future land-use decisions, and to assist the Planning Commission and the City Council in evaluating them.

Program 1(1).

Perform a survey and an identification of those existing facilities and activities within the city which emit abatable noise, and an identification of sources of noise that appear unabatable.

Program 1(2).

Compile an inventory of current land uses that are deemed to be incompatible with existing unabatable noise sources.

Program 1(3).

Prepare a chart of potential land uses that would be compatible with existing unabatable noise sources, assuming all abatable noise sources to be suppressed sufficiently to render such potential land uses compatible.

M. A. G. CONSULTANTS, INC.

(GOAL VII, continued)

Program 1(4).

Prepare a chart of potential land uses that would be compatible with all existing noise sources, whether or not they are abatable.

Program 1(5).

Develop and adopt guidelines for the Planning Commission and the City Council relative to the evaluation of noise-exposure level aspects of future applications for zoning, re-zoning, planned-development approvals, precise-plan approvals, and building permits.

Reference: BOOK TWO; Section II; Topic V; Section II-31.

GOAL VIII.

PROTECTION OF NOISE-ABATEMENT FLIGHTPATHS BY ESTABLISHING HEIGHT LIMITATIONS FOR PROPOSED BUILDINGS AND OTHER STRUCTURES.

Policy 1.

Preserve the existing noise-abatement flightpaths from the San Francisco International Airport through the establishment of maximum permissible elevations of proposed buildings and other structures within all of the cities adjacent to the Airport.

Program 1(1).

In co-operation with the other cities adjacent to the San Francisco International Airport, the San Francisco International Airport, the Airport Land Use Commission of the County of San Mateo, the Federal Aviation Administration, the Environmental Protection Agency, and the public, draft and define with specificity a vertical planning boundary, comprising specified sloping planes, horizontal planes, and height-above-ground limits, for the guidance of planners, developers, and architects, so that buildings and other structures can be constructed safely, without interfering with the safe and efficient flight of aircraft engaged in noise-abatement departure and approach operations from and to the San Francisco International Airport.

Program 1(2).

Examine Environmental Impact Reports for proposed high-rise structures within the City of Pacifica and in other cities adjacent to the San Francisco International Airport to ensure that such structures shall not interfere with established noise-abatement flightpaths to and from the San Francisco International Airport.

GOAL IX.

PROTECTION OF NOISE-ABATEMENT FLIGHTPATHS BY CONTROLLING LIGHT SOURCES AND LIGHT REFLECTIONS WITHIN THE CITY OF PACIFICA TO AVOID DISORIENTATION OF PILOTS.

Policy 1.

Establish, by ordinance of the City Council, regulations that prohibit the erection or operation, within the City of Pacifica, of any object that could cause a pilot engaged in a noise-abatement climb or descent from or to the San Francisco International Airport to become disoriented by exposure to reflected or emitted light of an objectionable intensity.

M. A. G. CONSULTANTS. INC.

(GOAL IX, Policy 1, continued)

Program 1(1).

Draft an ordinance that would **require that proposed building or other structures or objects in the City of Pacifica be so designed and constructed that:**

- a. There be no objectionable reflection of the light of the sun, and
- b. There be no steady light or a flashing light of objectionable intensity, other than an FAA-approved navigational light or the like,

directed toward an aircraft engaged in takeoff or approach operations from or to the San Francisco International Airport.

APPENDIX A.

Authorization: California Government Code Section 65302(g).

*superceded
by ch. 1124
stats 176*

Authorization: California Government Code Section 65302(g).

State legislation has provided a mandate specifying that a General Plan or a Comprehensive Plan of a city must contain a Noise Element. Section 65302(g) of the California Government Code requires all cities and counties in California to include in their general and comprehensive plans, a transportation element, as described in the following specification:

"A noise element in quantitative, numerical terms, showing contours of present and projected noise levels associated with all existing and proposed major transportation elements. These include but are not limited to the following:

- (1) Highways and freeways;
- (2) Ground rapid transit systems;
- (3) Ground facilities associated with all airports operating under a permit from the State Department of Aeronautics.

These noise contours may be expressed in any standard acoustical scale which includes both the magnitude of noise and frequency of its occurrence. The recommended scale is sound level A, as measured through the A-weighted network of a standard sound level meter, with corrections added for the time duration per event and the total number of events per 24-hour period.

Noise contours shall be shown in minimum increments of five decibels and shall be continued down to 65 dB(A). For regions involving hospitals, rest homes, long-term medical or mental care, or outdoor recreational areas, the contours shall be continued down to 45 dB(A).

Conclusions regarding appropriate site or route selection alternatives or noise impact upon compatible land uses shall be included in the general plan.

The state, local, or private agency responsible for the construction or maintenance of such transportation facilities shall provide to the local agency producing the general plan, a statement of the present projected noise levels of the facility, and any information that was used in the development of such levels."

APPENDIX B.

Authorization: California Administrative Code, Section 1092(e)(1) - (e)(4).

Authorization: California Administrative Code Section 1092(e)(1) - (e)(4).

In order to afford the City of Pacifica foreseeable beneficial leverages, the present Noise Element goes beyond the minimal requirements of the California Government Code by adding certain recommendations and policy guidelines applicable to noise mitigation both for the exterior noise and for necessary outdoor-to-indoor noise reduction as set forth in Title 25 of the State Administrative Code, Chapter 1, Subchapter 1, Article 4, Section 1092(e)(1) through (e)(4), which specify the following Noise Insulation Standards:

"(e) Noise Insulation from Exterior Sources:

- (1) Location and Orientation. Consistent with land-use standards, residential structures located in noise critical areas, such as proximity to select system of county roads and streets (as specified in 186.4 of the State of California Streets and Highways Code), railroads, rapid transit lines, airports, or industrial areas shall be designed to prevent the intrusion of exterior noises beyond prescribed levels with all exterior doors and windows in the closed position. Proper design shall include, but shall not be limited to, orientation of the residential structure, set-backs, shielding, and sound insulation of the building itself.
- (2) Interior Noise Levels. Interior community noise equivalent levels (CNEL) with windows closed, attributable to exterior sources shall not exceed an annual CNEL of 45 dB in any habitable room.
- (3) Airport Noise Source. Residential structures to be located within an annual CNEL contour (as defined in Title 4, Subchapter 6, California Administrative Code) of 60 dB require an acoustical analysis showing that the structure has been designed to limit intruding noise to the prescribed allowable levels. CNEL's shall be as determined by the local jurisdiction in accordance with its local general plan.
- (4) Vehicular and Industrial Noise Sources. Residential buildings or structures to be located within exterior community noise equivalent level contours of 60 dB of an existing or adopted freeway, expressway, major street, thoroughfare, railroad or rapid-transit line shall require an acoustical analysis showing that the proposed building has been designed to limit intruding noise to the allowable interior noise levels prescribed in Section 1092(e)(2). Exception: Railroads where there are no nighttime (10:00 p.m. to 7:00 a.m.) railway operations and where daytime (7:00 a.m. to 10:00 p.m.) railway operations do not exceed four (4) per day."

It is recommended that the above-stated criteria serve as the review guidelines for plan review in the City of Pacifica.

APPENDIX C.

Glossary of Noise Terms and Aviation Terms.

GLOSSARY OF NOISE TERMS - Non-alphabetical, in logical order.

- "Sound-pressure level" - the effective overpressure and underpressure deviation from atmospheric pressure of acoustic vibrations of air or other elastic media; the measure of sound. (See BOOK TWO, p. III-2).
- "Decibel (dB)" - one-tenth of a Bel. A logarithmic ratio of signal intensity, such as the ratio of sound-pressure levels or terms related to sound-pressure levels. A change in magnitude of one Bel (or 10 dB) signifies a change of one order of magnitude (one digit in the decimal system of number). A magnification of a signal intensity by 10 adds 1 Bel (or 10 dB). Most people regard a sound as "twice as loud," when the sound-pressure level is raised by 10 dB. (See BOOK TWO, p. III-2).
- "Frequency or pitch" - the number of pressure fluctuations per second in an acoustic tone; measured in Hertz "Hz" or cycles per second. (See BOOK TWO, p. III-2).
- "The A-weighted sound level." - the total sound-pressure level of a sound composed of a range of frequencies ("deep-pitch," "high-pitch," etc.) adjusted to the human-sensitivity "weights" for the full range of audible sound frequencies. Its measure is usually expressed in dB(A). (See BOOK TWO, p. III-3).
- "Noise" - sound without a meaningful or desirable signal; unwanted sound. All noise is sound, namely, unwanted sound. Not all sound is noise: Some sound is desirable and is not noise, whereas some sound is undesirable or unwanted and is termed "noise."
- "Noise exposure" or "noise-energy dosage" - the total amount of noise energy impinging on the human ear during a specified noise event or during a specified length of time. (See BOOK TWO, pp. III-4 and III-5).
- "Effective noise level" - Federal term for the measure of the total noise energy received at a specified point during a noise event, comprising a measure of the actual noise levels and a measure of their duration. (See BOOK TWO, page III-6).
- "Single-event noise exposure level (SENEL)" - California terminology for that effective noise level having a total exposure time of one second, which would produce the same total noise energy as a real noise event having variable noise levels over the actual duration of the noise event. (See BOOK TWO, page III-6).
- "Average or equivalent noise level (L_{eq})" - the energywise average noise level during the length of time of a noise event or other time period under consideration. (See BOOK TWO, pp. III-6 and III-7).
- "Hourly noise level (HNL)" - the average or equivalent noise level during one hour's time. (See BOOK TWO, p. III-7, Fig. III-6).

GLOSSARY OF NOISE TERMS, continued.

"Day-and-night-weighted average noise level - L_{dn} " - a weighted average noise level, specified by the Environmental Protection Agency, obtained by averaging of daytime (0700 to 2200, local civil time) noise events and by the averaging of nighttime noise events (2200 to 0700) with the addition of 10 dB, and taking the average of the 24 hours thus weighted. (See BOOK TWO, p. III-7).

"Community noise equivalent level (CNEL)" - a weighted average noise level, specified by the State of California (Title 4 of the Administrative Code), obtained by the averaging of daytime (0700 to 1900, local civil time) noise events and by the averaging of evening (1900 to 2200) noise events with the addition of 4.77 dB (10 times the decimal logarithm of 3) and the averaging of nighttime (2200 to 0700) noise events with the addition of 10 dB, and taking the average of the 24 hours thus weighted. (See BOOK TWO, p. III-8).

*

GLOSSARY OF AERONAUTICAL TERMS.

"Accelerate-stop distance" - the distance required to accelerate an airplane from standstill (brake release) to a specified speed, namely the so-called "critical-engine-failure speed, V_1 ", and, assuming failure of the critical engine at that instant, that V_1 speed is attained, to bring the airplane to a stop.

"Rotation speed" - that speed at which airplane-nose-up rotation is most opportune to change from the low-drag, low-angle, attitude for ground-run acceleration to the high-lift, high-angle, attitude preparatory to liftoff. " V_R ."

"Liftoff Speed" - that speed at which the airplane lift equals the airplane weight. " V_{LOF} ".

"Takeoff safety speed" - that speed at which the pilot acquires adequate control in the event of a failure of the critical engine. More speed is safe, less speed is unsafe. " V_2 ."

"Brake release point" - that point on a takeoff runway at which takeoff thrust is applied with the aircraft standing still, and at which the takeoff run is initiated on release of the brakes.

"Rolling takeoff" - a takeoff run initiated at less than takeoff thrust, with engine thrust increased while the airplane is rolling down the runway.

"Intersection takeoff" - a takeoff run initiated not at the customary brake-release point, but at some distance down the runway; for example, at some runway intersection or an intersection between the runway and a taxiway.

GLOSSARY OF AERONAUTICAL TERMS, continued.

"Air carrier" - a person who undertakes directly, by lease, or other arrangement to engage in air transportation.

"Aircraft" - a device that is used or intended to be used, for flight in the air.

"Airframe" - the airfoil surfaces (including rotors, but excluding propellers and rotating airfoils of engines), the fuselage, booms, nacelles, cowlings, fairings, and landing gear of an aircraft and their accessories and controls.

"Airplane" - an engine-driven fixed-wing aircraft heavier than air, that is supported in flight by the dynamic reaction of the air against its wings.

"Airport" - an area of land or water that is used or intended to be used for the landing and takeoff of aircraft, and includes its buildings and facilities, if any.

"Air traffic" - aircraft operating in the air or on an airport surface, exclusive of loading ramps and parking areas.

"Air traffic control" - a service operated by appropriate authority to promote the safe, orderly, and expeditious flow of air traffic.

"Airport traffic control service" - a service provided by an airport traffic control tower ("tower") for aircraft operating on the movement area and in the vicinity of an airport.

"Air route traffic control service" - a service provided by an air route traffic control center ("center") for aircraft operating on an IFR flight plan within controlled airspace and principally during the en-route phase of flight.

"Approach control service" - a service provided by an approach-control facility ("approach control," "common IFR room," "TRACON - terminal radar control") for arriving and departing VFR/IFR aircraft. The intermediate link between air-route traffic control service and airport traffic control service.

"Air transportation" - interstate, overseas, or foreign air transportation or the transportation of mail by aircraft.

"Large aircraft" - aircraft of more than 12,500 pounds maximum certificated takeoff gross weight.

"Heavy jet" - jet airplanes of more than 300,000 pounds maximum certificated takeoff gross weight.

NOTE.—Aircraft currently included in this "heavy" category are as follows:

Boeing 747; Lockheed C-5A; Douglas DC-10; Lockheed 1011; Boeing 707-300 series; Boeing 707-400 series; Douglas DC-8, 30 thru 50 series; Lockheed C-141; Douglas DC-8, 61 series; Douglas DC-8, 62 and 63 series; Boeing C-135 Electronic; Boeing C-137 VIP; Russian IL-62; BAC VC-10; Boeing B-52.

"Jumbo Jet" - DC-10, B-747, L-1011, and C-5A.

GLOSSARY OF AERONAUTICAL TERMS, continued.

- "Low-bypass-ratio engine" - a turbofan engine in which the fan-driven secondary bypass air amounts to approximately 1.5 times the amount of air that is ingested in the compressor, passed through the combustion chamber and the turbine, and expelled in the primary jet in the form of combustion gases.
- "High-bypass-ratio engine" - a turbofan engine in which the fan-driven secondary bypass air amounts to as much as 5 times the amount of air that is ingested in the compressor, passed through the combustion chamber and the turbine, and expelled in the primary jet in the form of combustion gases.
- "Direction" - whether "course," "bearing," "heading," or "wind direction," is always magnetic, unless specifically stated otherwise. In the San Francisco Bay Area magnetic North is about 18 degrees to the right (i. e., toward the East) of true North.
- "Radial" - a magnetic bearing extended from a VOR (which see below) or other VOR-connected navigational aid.
- "ILS" - instrument landing system which provides localizer and glideslope information to a pilot in an approach toward a desirable touchdown point on a runway.
- "VFR" - visual flight rules, in which the pilot is fully responsible for separation from the ground and from other aircraft.
- "VFR conditions" - weather conditions in which the "ceiling" (the height above the earth's surface of the lowest layer of clouds or obscuring phenomena that is reported as "broken," "overcast," or "obscuration," and not classified as "thin" or "partial") is not less than 1,000 feet and the "horizontal visibility on the ground" (distance on the ground at which objects are clearly identifiable by a qualified observer) is not less than 3 statute miles.
- "IFR" - instrument flight rules, in which the air traffic control service provides a pilot with separation from other air traffic.
- "IFR conditions" - weather conditions below the minimum for flight under visual flight rules.
- "VHF" - very high frequency, usually 108 through 136 mHz (mega-Hertz).
- "VOR" - VHF Omni Range. An electronic device, located on the ground, which enables a pilot to read the directional radial on which the aircraft is located relative to the known location of the VOR transmitter. For example, a reading of "090 degrees" means that the aircraft is due East (magnetically) of the VOR transmitter.
- "DME" - Distance-Measuring Equipment. An electronic navigational-aid device, located on the ground, which provides a readout in the aircraft cockpit of the slant distance between the aircraft and the DME transmitter.
- "Wake turbulence" - aerodynamic disturbance in the atmosphere created by thrust-stream turbulence, prop wash, or wing-tip vortices or rotor vortices.

*

APPENDIX D.

TRAFFIC NOISE DATA

Locations for Which CNEL Was Calculated From Hourly Traffic Data,

and

Locations at Which Noise Monitoring Was Performed for Traffic Noise and
Aircraft Noise.

NOISE ELEMENT OF THE CITY OF PACIFICA. TRAFFIC NOISE DATA.

Locations for Which CNEL Was Calculated
From Hourly Traffic Data:

Noise-Monitoring
Locations:

Edgemar:

Gateway Drive, between Hickey and Imperial.
Gateway Drive, west of Hickey Blvd.
Skyline Blvd., south of Hickey Blvd.
Skyline Blvd., north of Hickey Blvd.
Gateway Drive, between Westcliff & Sea Breeze.
Hickey Blvd., south of Gateway Drive.
Palmetto Ave., between Westline & Paradise
Drive.
Hickey Blvd., west of Skyline Blvd.

Parkview Circle, west and east
of Fairmont Park.

Pacific Manor:

Oceana Blvd., south of Manor Drive.
Oceana Blvd., north of Manor Drive.
Oceana Blvd., between Manor Drive and
Monterey Road.
Palmetto Ave., north of West Manor Drive.
Palmetto Ave., south of West Manor Drive.
Palmetto Ave., btwn. West Manor and
Aura Vista.
West Manor Dr., btwn. Palmetto Ave.
and Esplanade.
Palmetto Ave., btwn. Manor & West Avalon.
Oceana Blvd, Route-1 on-ramp at Milagra.
Esplanade, btwn., Aura Vista & West Manor.
Palmetto Ave., btwn. Route-1 on-ramp and
Sharon Way.
Palmetto Ave., btwn. West Manor & Aura Vista.
Monterey Road east of Cabrillo Highway (Route 1).
Manor Dr., btwn. Claridge Dr. & Inverness Dr.
Manor Dr., btwn. Lewis Lane & Cragmont Ct.
Palmetto Ave., North of Monterey Road.
Inverness Dr., btwn. Horizon & Foothill.
Manor Dr., East of Oceana Blvd.
West Manor Dr., btwn. Palmetto Ave., &
Esplanade.
Inverness Dr., btwn. Heathcliff Dr. & Glencourt Way.
Glencourt Way, btwn. Glasgow & Lomond.
Oceana Blvd., btwn. Manor & Monterey.
Skyline Blvd., North of Manor Drive.
Skyline Blvd., South of Manor Drive.
Monterey Rd., btwn. Beaumont Blvd. and Norfolk Pl.
Hickey Blvd. north of Monterey Rd.
Hickey Blvd. west of Skyline Blvd.
Hickey Blvd., east of Skyline Blvd.
Hickey Blvd., btwn. Inverness and Firecrest.

Vista Mar at Manor Drive,
eastern sidewalk on
Vista Mar.

Monterey Rd. at Hickey Blvd.
on southern sidewalk on
Monterey Rd.

Manor Drive at Skyline Blvd.,
Route 35. On eastern side-
walk on Manor Drive, 80 ft.

Noise Element of the City of Pacifica. Traffic Noise Data. (continued)
 Locations of Calculated CNEL: Noise-Monitoring Locations:

Sharp Park:

Oceana Blvd., south of Clarendon Rd.	Parking lot overlooking
Oceana Blvd., north of Clarendon Rd.	Sharp Park Rd. west of
East Frontage Rd. south of Sharp Park Rd.	church edifice.
Francisco Blvd. or West Frontage Rd. north of	
Sharp Park Rd.	Southern corner of Sierra Terrace
Oceana Blvd. north of Paloma Ave.	and Canyon Drive
Paloma Ave., east of Oceana Blvd.	
Paloma Ave., west of Oceana Blvd.	Eastern sidewalk on Cindy Way,
Francisco Blvd., south of Clarendon Rd.	midway between Ridgeway Dr.
Francisco Blvd., north of Clarendon Rd.	and Cullen Drive.
Francisco Blvd., btwn Carmel Ave. & Paloma Ave.	
Francisco Blvd., south of Lakeside Ave.	
Palmetto Ave., btwn. Brighton & Pacific.	
Francisco Blvd., btwn. Salada & Santa Maria.	
Francisco Blvd., btwn. Fairway and Route-1 off-ramp.	
Oceana Blvd., btwn. Carmel Ave., & Paloma Ave.	
Oceana Blvd., btwn. Clarendon & Brighton Rd.	
Clarendon Rd., west of Francisco Blvd.	
Francisco Blvd., north of Lakeside Ave.	
Paloma Ave., west of Oceana Blvd.	
Francisco Blvd., north of Paloma Ave.	
Paloma Ave., west of Francisco Blvd.	
Oceana Blvd., btwn. Carmel Ave. and Paloma Ave.	
Oceana Blvd., btwn. Route-1 on-ramp (north of	
Paloma) and Church entrance.	
Francisco Blvd., btwn. Santa Rosa Ave., & San Jose Ave.	
Sharp Park Rd., east of East Frontage Rd.	
Sharp Park Rd., west of East Frontage Rd.	
Beach Blvd., btwn. Santa Rosa & San Jose Aves.	
Paloma Ave., south leg btwn. Oceana Blvd. and Mirador Terrace.	
Westport Wy., between Route 1 and Bradford.	

Valleamar:

State Route 1, north of Reina del Mar Ave.,	Southern sidewalk in southern
State Route 1, south of Reina del Mar Ave.	half of Calaveras Loop.
Reina del Mar Ave., east of Cabrillo Highway.	Eastern side of Reina del Mar
Reina del Mar Ave., west of Minerva Ave.	Ave., south of Calaveras
	junction.
	In parking lot of school on Reina del
	Mar Ave., 400 ft. from Highway
	150 ft. from Reina del Mar Ave.

Rockaway Beach and upper Oddstad area:

Everglades Dr., east of Terra Nova Blvd.	End of Oddstad Blvd.
Terra Nova Blvd., east of Fassler Ave.	
Terra Nova Blvd., north of Everglades Dr.	
Terra Nova Blvd., south of Everglades Dr.	(continued)

Noise Element of the City of Pacifica. Traffic Noise Data. (continued)

Locations of Calculated CNEL:

Noise-Monitoring Locations:

Rockaway Beach and upper Oddstad area (continued)

Oddstad Blvd., btwn. Crater Lake & Muir Way.
 Fassler Ave., west of Crespi Dr.
 Fassler Ave., east of Crespi School.
 Everglades Dr., btwn. Terra Nova Blvd., & Picardo Ct.
 Sea Bowl Drive, east of Cabrillo Highway.
 Sea Bowl Drive (Fassler Ave.) at Route 1.
 Cabrillo Highway north of Sea Bowl Drive.
 Crespi Drive, east of Cabrillo Highway.
 Crespi Drive, south of Fassler Avenue.

Linda Mar:

Alicante Dr., btwn. Manzanita Dr. & Linda Mar Blvd.	On sidewalk at 636 Linda Mar Blvd., 300 ft. east of traffic signal.
Adobe Dr., south of Linda Mar Blvd.	
Seville Dr., north of Linda Mar Blvd.	
Peralta Rd., north of Linda Mar Blvd.	
Peralta Rd., south of Linda Mar Blvd.	Northern corner of Peralta & Montezuma, 150 ft. from traffic signal on Linda Mar Blvd. at Peralta Rd.
Peralta Rd., north of Linda Mar Blvd.	
De Solo Dr., north of Linda Mar Blvd.	
San Pedro Rd., east of Cabrillo Highway.	
De Solo Dr., south of Linda Mar Blvd.	
Linda Mar Blvd., btwn. Hermosa & Adobe.	In front of Sanchez Adobe, 140 ft. south of Linda Mar Blvd.
Linda Mar Blvd., btwn Solano Blvd. & Alicante Dr.	
Linda Mar Blvd., btwn Adobe & Sheila.	In front of Alma Heights Academy, 40 ft. from centerline of Linda Mar Blvd.
Linda Mar Blvd., east of Alicante Dr.	
Crespi Dr., btwn. Tapis Ct. & Manzanita Dr.	
Alicante Dr., btwn. Manzanita Dr. & Linda Mar Blvd.	
Crespi Dr., btwn. Regina & La Mirada.	
Linda Mar Blvd., btwn Oddstad Blvd. & Aspen Dr.	
Oddstad Blvd., north of Terra Nova Blvd.	
Oddstad Blvd., btwn. Terra Nova & Park Pacifica Ave.	
Oddstad Blvd., btwn. Big Bend & Yosemite Dr.	
Oddstad Blvd., south of Terra Nova Blvd.	
Crespi Dr., btwn. Peralta Rd. & Escalero.	
Crespi Dr., btwn. Manzanita & Lerida Way.	
Linda Mar Blvd., east of De Solo Dr.	
Linda Mar Blvd., east of Seville Dr.	
Linda Mar Blvd., east of Peralta Rd.	
Rosita Rd., btwn. Adobe & Monte Verde.	
State Route 1, south of Linda Mar Blvd.	
State Route 1, north of Linda Mar Blvd.	
Peralta Rd., btwn. Bower & Rosita Rd.	
Rosita Rd., btwn. Peralta & Adobe Dr.	
Sheila Lane, btwn. Linda Mar Blvd. & Malavear Ct,	
Lerida Way, btwn. Elm and Poplar.	
Manzanita, btwn. View Way & Dulles Ct.	

APPENDIX E.

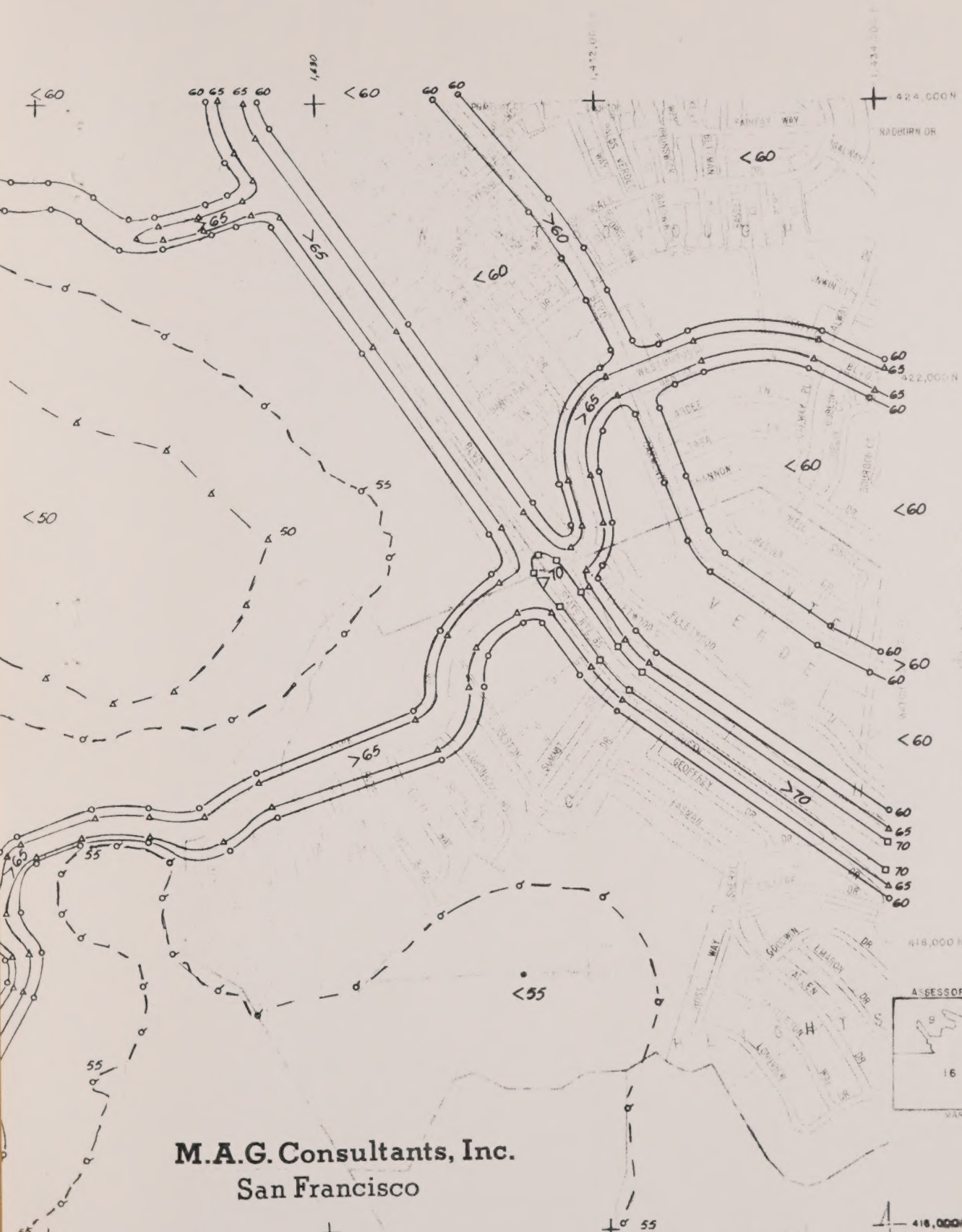
CNEL CONTOURS.



1975 CHL from
Ground sources
1" = 1,000 feet
3B

SCALE 1" = 400'

COUNTY OF SAN
STATE OF CALIFORNIA



M.A.G. Consultants, Inc.
San Francisco

**1975 CNEL from
ground sources**



P-1 SSF 5.3
P-2 12/14/71
SHEET
4B

Reduced Scale: 1" = 1,000 feet.

46.000 +

+

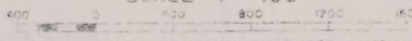
46.000

MATCH SHEET

46.000

46.000

+

COUNTY OF SAN MATEO STATE OF CALIFORNIA	SCALE 1" = 400'  LAMBERT CONFORMAL CONICAL PROJECTION—1927 NORTH AMERICAN DATUM	COUNTY OF SAN MATEO STATE OF CALIFORNIA
--	--	--

1,420,000 E

416,000 N

416,000 N

416,000 N

416,000 N

408,000 N

P 24 11/1/75

M.A.G. Consultants, Inc.
San Francisco

1975 CNEL from
ground sources

SHEET
5A

Reduced Scale: 1" = 1,000 feet.



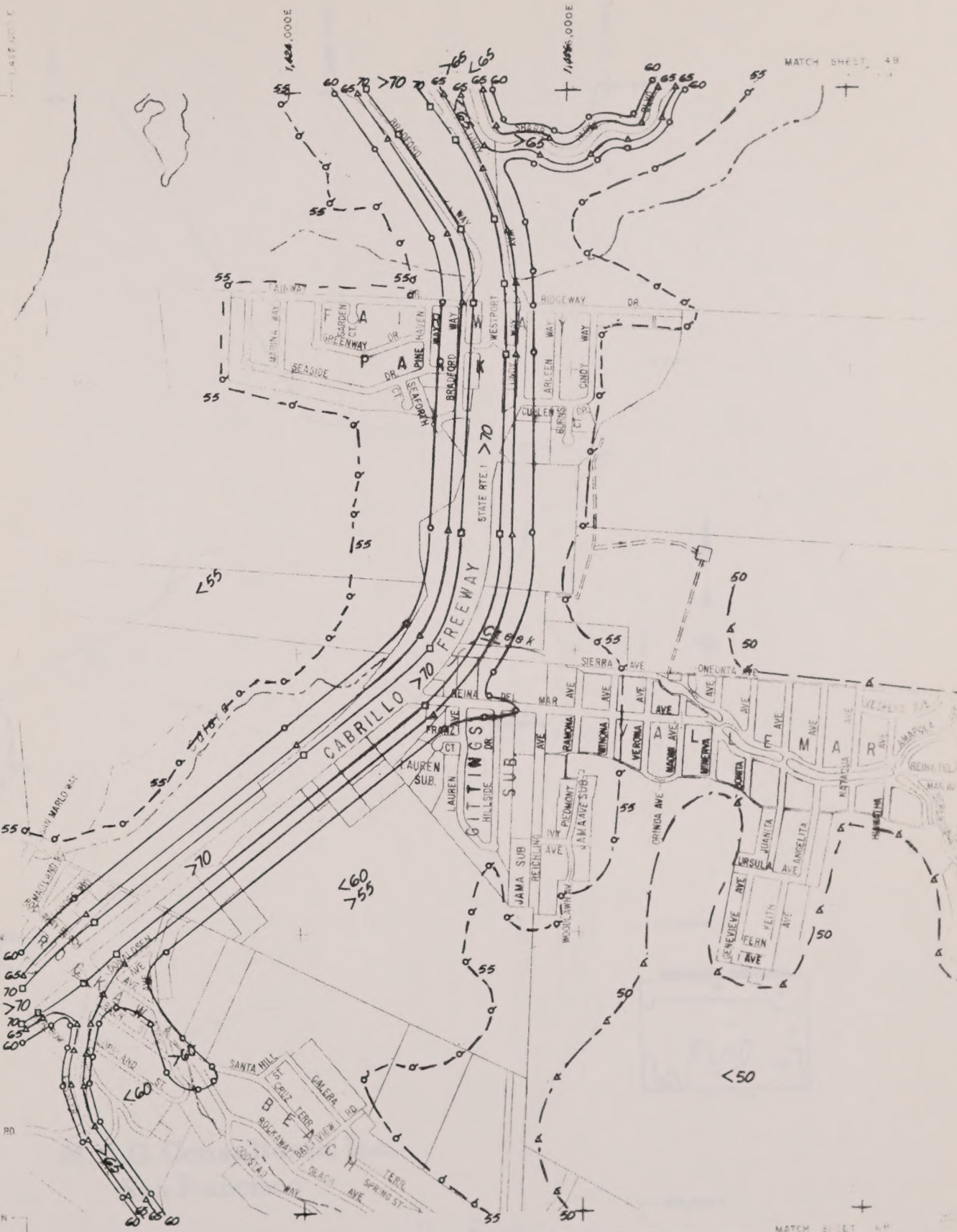
416,000N

414,000N

410,000N

ROBERTS RD

408,000N



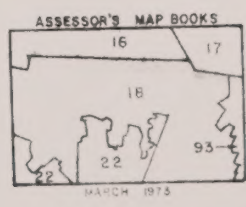
CALIFORNIA STATE
COORDINATE SYSTEM
ZONE 9

SCALE 1" = 400'

400 0 400 800 1200 1600

LAMBERT CONFORMAL CONICAL PROJECTION - 1927 NORTH AMERICAN DATUM

COUNTY OF SAN MATEO
STATE OF CALIFORNIA



M.A.G. Consultants, Inc.
San Francisco

**1975 CNEL from
 ground sources**

INFORMATION	P-1 12/1/75	SHEET 5B
	<i>[Signature]</i>	
	MAJOR LANDLINES	

SAN MATEO
 CALIFORNIA

Reduced Scale: 1" = 1,000 feet.

106,1

MATCH SHEET

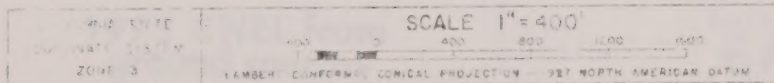
1,000
1,000 E

402 000 N

M. A. G. Consultants, Inc.
San Francisco

4,000 N

MATCH SHEET



COUNTY OF SAN MATEO
STATE OF CALIFORNIA

65° 30' 71" 20' 65°

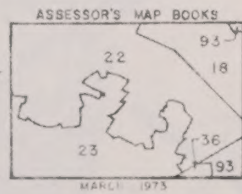


CALIFORNIA STATE
COORDINATE SYSTEM
ZONE 3
SCALE 1" = 400'
LAMBERT CONFORMAL CONICAL PROJECTION - 1927 NORTH AMERICAN DATUM

COUNTY OF SAN MATEO
STATE OF CALIFORNIA



M.A.G. Consultants, Inc.
San Francisco



**1975 CNEL from
ground sources**

INFORMATION
P 12/14/74
DATE: 12/14/74
BY: J. A. J. N. H. L.
MAJOR LANDLORDS

**SHEET
6B**

Reduced Scale: 1" = 1,000 feet.



INTERIM AIRPORT LAND USE PLAN SAN FRANCISCO AIRPORT PLAN AREA SAN MATEO COUNTY AIRPORT LAND USE COMMISSION



U.C. BERKELEY LIBRARIES



C101745349

